

INTEGRATED PHYSICS AND CHEMISTRY (Science 112.42)

Correlation of Texas Essential Knowledge and Skills

CHAPTER 1 - INTRODUCTION TO WATER

ACTIVITY	KNOWLEDGE AND SKILLS
Surveying the Properties of Water, 1-11	112.42.1(A)(B) Scientific processes (...conducts field and laboratory investigations...) 112.42.2(A)(B)(C)(D)(E) Scientific processes (...uses scientific methods...) 112.42.3(A) Scientific processes (analyze, review, and critiques scientific explanations...) 112.42.6(H) Science concepts (analyze the effects of heating and cooling...) 112.42.9(A) Science concepts (relate the structure of water to its function as the universal solvent)
Clearly H ₂ O, 1-21	112.42.1(A)(B) Scientific processes (...conducts field and laboratory investigations...) 112.42.2(A)(B)(C)(D)(E) Scientific processes (...uses scientific methods...) 112.42.3(A) Scientific processes (analyze, review, and critiques scientific explanations...) 112.42.6(H) Science concepts (analyze the effects of heating and cooling...) 112.42.9(A) Science concepts (relate the structure of water to its function as the universal solvent)
Water Careers, 1-85	112.42.3(D) Scientific processes (describe connections between physics and chemistry, and future careers...)
Environmental Controversy: Class Project, 1-105	112.42.2(A)(B)(C)(D)(E) Scientific processes (...uses scientific methods...) 112.42.3(A) Scientific processes (analyze, review, and critiques scientific explanations...) 112.42.8(E) Science concepts (research and describe the environmental and economic impact of the end-products of chemical reactions)
"pH - The First Clue to Water Quality", 1-109	112.42.1 (A)(B) Scientific processes (...conducts field and laboratory investigations...) 112.42.2(A)(B)(C)(D)(E) Scientific processes (...uses scientific methods...) 112.42.3(A) Scientific processes (analyze, review, and critiques scientific explanations...) 112.42.8(A) Science concepts (distinguish between physical and chemical changes in matter...) 112.42.9(A) Science concepts (relate the structure of water to its function as the universal solvent) (B) (relate the concentration of ions in a solution to physical and chemical properties...)

ACTIVITY	KNOWLEDGE AND SKILLS
Keep Our Community Beautiful, 1-125	112.42.2(A)(B)(C)(D)(E) Science processes (...uses scientific methods...) 112.42.3(A) Science processes (analyze, review, and critiques scientific explanations...) 112.42.8(E) Science concepts (research and describe the environmental and economic impact of the end-products of chemical reactions)
Uncle Sam Says, "Keep It Clean!", 1-171	112.42.2(A)(B)(C)(D)(E) Science processes (...uses scientific methods...) 112.42.3(A) Science processes (analyze, review, and critiques scientific explanations...) 112.42.8(E) Science concepts (research and describe the environmental and economic impact of the end-products of chemical reactions)
Water Chemistry Checkup, 1-185	112.42.1(A)(B) Scientific processes (...conducts field and laboratory investigations...) 112.42.2(A)(B)(C)(D)(E) Science processes (...uses scientific methods...) 112.42.3(A) Scientific processes (analyze, review, and critiques scientific explanations...) 112.42.9(A) Science concepts (relate the structure of water to its function as the universal solvent) (B) (relate the concentration of ions in a solution to physical and chemical properties...) (C) (demonstrate how various factors influence solubility ...)
How Hard is Hard Water?, 1-195	112.42.1(A)(B) Scientific processes (...conducts field and laboratory investigations...) 112.42.2(A)(B)(C)(D)(E) Science processes (...uses scientific methods...) 112.42.3(A) Scientific processes (analyze, review, and critiques scientific explanations...) 112.42.9(A) Science concepts (relate the structure of water to its function as the universal solvent) (B) (relate the concentration of ions in a solution to physical and chemical properties...) (C) (demonstrate how various factors influence solubility ...)

CHAPTER 2 - DRINKING WATER AND WASTEWATER TREATMENT

ACTIVITY	KNOWLEDGE AND SKILLS
Water Works, 2-1	112.42.1(A)(B) Scientific processes (...conducts field and laboratory investigations...) 112.42.2(A)(B)(C)(D)(E) Science processes (...uses scientific methods...) 112.42.3(A) Scientific processes (analyze, review, and critiques scientific explanations...) 112.42.8(A) Science concepts (distinguish between physical and chemical changes in matter...) (E) (research and describe the environmental and economic impact of the end-products of chemical reactions) 112.42.9(A) Science concepts (relate the structure of water to its function as the universal solvent) (B) (relate the concentration of ions in a solution to physical and chemical properties...) (C) (demonstrate how various factors influence solubility ...)
Carbon Treatment for Water Pollution Control, 2-9	112.42.1(A)(B) Scientific processes (...conducts field and laboratory investigations...) 112.42.2(A)(B)(C)(D)(E) Science processes (...uses scientific methods...) 112.42.3(A) Scientific processes (analyze, review, and critiques scientific explanations...) 112.42.8(A) Science concepts (distinguish between physical and chemical changes in matter...) (E) (research and describe the environmental and economic impact of the end-products of chemical reactions) 112.42.9(A) Science concepts (relate the structure of water to its function as the universal solvent) (B) (relate the concentration of ions in a solution to physical and chemical properties...) (C) (demonstrate how various factors influence solubility ...)

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Chlorination for Disinfection, 2-15	112.42.1(A)(B) Scientific processes (...conducts field and laboratory investigations...) 112.42.2(A)(B)(C)(D)(E) Science processes (...uses scientific methods...) 112.42.3(A) Scientific processes (analyze, review, and critiques scientific explanations...) 112.42.8(A) Science concepts (distinguish between physical and chemical changes in matter...) (E) (research and describe the environmental and economic impact of the end-products of chemical reactions) 112.42.9(A) Science concepts (relate the structure of water to its function as the universal solvent) (B) (relate the concentration of ions in a solution to physical and chemical properties...) (C) (demonstrate how various factors influence solubility ...)
Metals Pollution Reduction, 2-59	112.42.1(A)(B) Scientific processes (...conducts field and laboratory investigations...) 112.42.2(A)(B)(C)(D)(E) Science processes (...uses scientific methods...) 112.42.3(A) Scientific processes (analyze, review, and critiques scientific explanations...) 112.42.8(A) Science concepts (distinguish between physical and chemical changes in matter...) (E) (research and describe the environmental and economic impact of the end-products of chemical reactions) 112.42.9(A) Science concepts (relate the structure of water to its function as the universal solvent) (B) (relate the concentration of ions in a solution to physical and chemical properties...) (C) (demonstrate how various factors influence solubility ...)
Wastewater Treatment, 2-73	112.42.2(A)(B)(C)(D)(E) Science processes (...uses scientific methods...) 112.42.3(A) Scientific processes (analyze, review, and critiques scientific explanations...) 112.42.8(A) Science concepts (distinguish between physical and chemical changes in matter...) (E) (research and describe the environmental and economic impact of the end-products of chemical reactions) 112.42.9(A) Science concepts (relate the structure of water to its function as the universal solvent) (B) (relate the concentration of ions in a solution to physical and chemical properties...) (C) (demonstrate how various factors influence solubility ...)

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The World of Biological Wastewater Treatment, 2-83	112.42.2(A)(B)(C)(D)(E) Scientific processes (...uses scientific methods...) 112.42.3(A) Scientific processes (analyze, review, and critiques scientific explanations...) 112.42.8(A) Science concepts (distinguish between physical and chemical changes in matter...) (E) (research and describe the environmental and economic impact of the end-products of chemical reactions) 112.42.9(A) Science concepts (relate the structure of water to its function as the universal solvent) (B) (relate the concentration of ions in a solution to physical and chemical properties...) (C) (demonstrate how various factors influence solubility ...)
Storm Water: Best Management Practices and Pollution Prevention, 2-123	112.42.1(A)(B) Science processes (...conducts field and laboratory investigations...) 112.42.2(A)(B)(C)(D)(E) Scientific processes (...uses scientific methods...) 112.42.3(A) Scientific processes (analyze, review, and critiques scientific explanations...) 112.42.8(A) Science concepts (distinguish between physical and chemical changes in matter...) (E) (research and describe the environmental and economic impact of the end-products of chemical reactions) 112.42.9(A) Science concepts (relate the structure of water to its function as the universal solvent) (B) (relate the concentration of ions in a solution to physical and chemical properties...) (C) (demonstrate how various factors influence solubility ...)

CHAPTER 3 - SURFACE WATER RESOURCES

ACTIVITY	KNOWLEDGE AND SKILLS
Catch Me If You Can, 3-7	112.42.1(A)(B) Science processes (...conducts field and laboratory investigations...) 112.42.2(A)(B)(C)(D)(E) Scientific processes (...uses scientific methods...) 112.42.3(A) Scientific processes (analyze, review, and critiques scientific explanations...) 112.42.4(B) Science concepts (investigate and describe applications of Newton's laws...)
Floods, 3-37	112.42.1(A)(B) Science processes (...conducts field and laboratory investigations...) 112.42.2(A)(B)(C)(D)(E) Scientific processes (...uses scientific methods...) 112.42.3(A) Scientific processes (analyze, review, and critiques scientific explanations...) 112.42.4(B) Science concepts (investigate and describe applications of Newton's laws...) Floods, 3-37
Pollutants: How Much Total or How Much per Unit of Water?, 3-79	112.42.1(A)(B) Science processes (...conducts field and laboratory investigations...) 112.42.2(A)(B)(C)(D)(E) Scientific processes (...uses scientific methods...) 112.42.3(A) Scientific processes (analyze, review, and critiques scientific explanations...) 112.42.8(A) Science concepts (distinguish between physical and chemical changes in matter...) (E) (research and describe the environmental and economic impact of the end-products of chemical reactions) 112.42.9(A) Science concepts (relate the structure of water to its function as the universal solvent) (B) (relate the concentration of ions in a solution to physical and chemical properties...) (C) (demonstrate how various factors influence solubility ...)
Thermal Pollution, 3-89	112.42.1(A)(B) Science processes (...conducts field and laboratory investigations...) 112.42.2(A)(B)(C)(D)(E) Scientific processes (...uses scientific methods...) 112.42.3(A) Scientific processes (analyze, review, and critiques scientific explanations...) 112.42.6(A) Science concepts (describe the law of conservation of energy) (B) investigate and demonstrate the movement of heat...) (E) measure the thermal...of various material and explain the results) 112.42.8(A) Science concepts (distinguish between physical and chemical changes in matter...)

CHAPTER 4 - GROUNDWATER RESOURCES

ACTIVITY	KNOWLEDGE AND SKILL
Groundwater Cleaning Up, 4-67	112.42.2(A)(B)(C)(D)(E) Scientific processes (...uses scientific methods...) 112.42.3(A) Scientific processes (analyze, review, and critiques scientific explanations...) 112.42.8(E) Science concepts (research and describe the environmental and economic impact of the end-products of chemical reactions) 112.42.9(C) Science concepts (simulate the effects of acid rain on soil...) (D) (demonstrate how various factors influence solubility...)
What is Groundwater Pollution Doing to the Neighborhood?, 4-77	112.42.2(A)(B)(C)(D)(E) Scientific processes (...uses scientific methods...) 112.42.3(A) Scientific processes (analyze, review, and critiques scientific explanations...) 112.42.8(A) Science concepts (distinguish between physical and chemical changes in matter...) (E) (research and describe the environmental and economic impact of the end-products of chemical reactions) 112.42.9(A) Science concepts (relate the structure of water to its function as the universal solvent) (B) (relate the concentration of ions in a solution to physical and chemical properties...) (C) (demonstrate how various factors influence solubility ...)
Landfills and the Potential for Groundwater Contamination, 4-97	112.42.2(A)(B)(C)(D)(E) Scientific processes (...uses scientific methods...) 112.42.3(A) Scientific processes (analyze, review, and critiques scientific explanations...) 112.42.8(A) Science concepts (distinguish between physical and chemical changes in matter...) (E) (research and describe the environmental and economic impact of the end-products of chemical reactions) 112.42.9(A) Science concepts (relate the structure of water to its function as the universal solvent) (B) (relate the concentration of ions in a solution to physical and chemical properties...) (C) (demonstrate how various factors influence solubility ...)

ACTIVITY	KNOWLEDGE AND SKILL
Leaking Underground Storage Tanks, 4-107	<p>112.42.2(A)(B)(C)(D)(E) Scientific processes (...uses scientific methods...)</p> <p>112.42.3(A) Scientific processes (analyze, review, and critiques scientific explanations...)</p> <p>112.42.8(A) Science concepts (distinguish between physical and chemical changes in matter...)</p> <p>(E) (research and describe the environmental and economic impact of the end-products of chemical reactions)</p> <p>112.42.9(A) Science concepts (relate the structure of water to its function as the universal solvent)</p> <p>(B) (relate the concentration of ions in a solution to physical and chemical properties...)</p> <p>(C) (demonstrate how various factors influence solubility ...)</p>

CHAPTER 5 - WETLANDS AND COASTAL WATERS

ACTIVITY	KNOWLEDGE AND SKILLS
Oil Spills, 5-65	112.42.1(A)(B) Scientific processes (...conducts field and laboratory investigations...) 112.42.2(A)(B)(C)(D)(E) Scientific processes (...uses scientific methods...) 112.42.3(A) Scientific processes (analyze, review, and critiques scientific explanations...) 112.42.8(A) Science concepts (distinguish between physical and chemical changes in matter...) (E) (research and describe the environmental and economic impact of the end-products of chemical reactions) 112.42.9(A) Science concepts (relate the structure of water to its function as the universal solvent) (B) (relate the concentration of ions in a solution to physical and chemical properties...) (C) (demonstrate how various factors influence solubility ...)
"How Water Processes Move Sand", 5-79	112.42.1(A)(B) Scientific processes (...conducts field and laboratory investigations...) 112.42.2(A)(B)(C)(D)(E) Scientific processes (...uses scientific methods...) 112.42.3(A) Scientific processes (analyze, review, and critiques scientific explanations...) 112.42.4(A) Science concepts (calculate speed, momentum, acceleration,...) (B) (investigate and describe applications of Newton's laws...) 112.42.9 (D) Science concepts (demonstrate how various factors influence solubility...) (E) (demonstrate how factors such as particle size, influence the rate of dissolving)